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A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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Saturday, April 10, 1926

PANAMA WHITE INDIANS MAY PRODUCE NEW RACE

A race within a race. In the White Indians of Darien, famous as a part of San Blas tribes that are resisting Panamanian appression and rule, there lies the potentialities of a new white race.

Such is the conclusion of Dr. Reginald G. Harris, director of the Biological Laboratory of Cold Spring Harbor, Long Island, N. Y. who last year, with the assistance of Mrs. Harris and R. O. Marsh, the civil engineer and explorer who brought the White Indians to America, made a first hand genetical study of the San Blas in their native villages, hitherto closed to foreigners, white or black.

How he made a careful analysis of the family histories of the White Indians is told in a scientific report which appeared in a recent issue of the American yournal of Physical Anthropology of which Dr. Ales Hrdlicka, anthropologist of the Smithsonian Institution, is editor.

"That the condition 'Thite Indian' is genetical in nature is amply demonstrated by the data contained in the family histories," Dr. Harris says in the report. "The White Indians thus hold potentialities for race production."

The San Blas Indians, both brown and white, are uncontaminated by Caucasian blood since their customs and race prejudices have assured exceptional "purity" of their blood, Dr. Harris found. Mr. Marsh's party, of which he was a member, was the first white group that had ever been allowed to stay in one of the San Blas villages evernight. Moreover, the White Indians, as well as the brown from which they came, are clearly Indians, not hybrids, and Dr. Hrdlicka in another article in the same journal says that the San Blas are related to and apparently the same as the famous Mayas of Central America and Mexico who years before the time of Christ had a civilization whose ruins today puzzle and astonish archaeologists.

In the technical sense the White Indians are partial albinos, but Dr. Harris says: "Their appearance is obviously the expression of a homozygous recessive condition, due originally to a mutation in one or more genes."

This means that sometime in the past something happened within the germ cells of the brown San Blas Indians that caused the white characteristics of the White Indians to appear. The brown pigmentation usually gains ascendancy over the white or partial albino characteristics in the offspring but occasionally the white becomes deminant and a brown Indian couple will have a white child.

According to legend the San Blas have hated the white race since the days of the Spanish conquest, and therefore the White Indians have been looked down upon

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by the browns. Although they were not banished to the hills and did not form separate colonies as previous reports brought by Mr. Marsh indicated, infants that proved to be white upon birth were often killed and even now white Indian men are forbidden marriage altogether. White women are allowed to marry, but for one reason or another, nodoubt mainly because the brown women are far more attractive than the white, this is very rare.

The production of a new white race is therefore hindered since the largest number of white children would be produced by the marriage of white Indian men with white Indian women.

In spite of the artificial restrictions that customs impose, birth of white children to parents of brown or light brown coloration is so frequent that 50 to 100 times as many white are found among the San Blas as would be expected if the same ratio of one albino in 10,000, the usual figure among other races, was also true for the San Blas. Actually seven tenths of one per cent. or 138 out of the estimated 20,100 San Blas Indians are white, a remarkable percentage.

Thus the White Indians are dependent, under present conditions, upon the browns for their perpetuation.

Dr. Harris and Dr. Hrdlicka both say that the White Indians deserve a most thorough investigation from all points of approach.

INVISIBLE KILLER EATS DEADLIEST OF BACTERIA

Bacteriophage, that mysterious principle or organism, as yet unseen by any scientists though used daily by many, has been discovered in a new role as devourer of the deadliest of bacteria, by Dr. Paul F. Clark and Alice Shiedt Clark of the University of Wisconsin, and Dr. L. O. Dutton of the Methodist Hospital, Memphis, Tennessee.

The most dangerous of the disease-causing organisms which the three researchers have discovered to be a part of the bill of fare of the bacteriophage is known as the hemolytic streptococcus, or blood-dissolving chain-germ, because of its fatal action in the blood, causing one of the worst types of blood poisoning. It is also the causal organism of scarlet fever, and of one of the deadliest types of pncumonia.

Cultures of thisorganism in test tubes grow vigorously and make the nutrient fluid cloudy, but the introduction of a little material containing the bacteriophage soon makes it clear again, due to the death and disintegration of the disease germs. In Dr. Dutton's experiments, this clearing-up of the cultures took place in as short a time as thirty-six hours.

Bacteriophage, which literally translated means "bacterium eater", is a puzzling something discovered by the researches of F. W. Twort, a British scientist, and F.d'Herelle, a French Canadian. Bacteriologists are very much at odds over it, some claiming that it is a living organism, or at least a living substance, and

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others maintaining that though it does some things that living beings do it does not have all the attributes of life.

If it has an organized body at all it must be exceedingly minute, for it has never been seen even with the ultra-microscope, and it can pass through the pores of a fine porcelain filter. Moreover, it is not killed by high temperatures that are fatal to all other known organisms. Yet when even a little of the fluid containing it is added to a culture of bacteria, the latter are soon dead, no matter how numerous they are nor how little there was of the bacteriophage to begin with.

It is this apparent power to multiply itself that sets the bacteriophage apart from even the most complex of lifeless chemicals, for lifeless things do not have the power of self-propagation. Much research on this puzzling stuff is now in progress, from which far-reaching effects in medicine and sanitation may result.

HARD ROADS SAVE TIRES AND GASOLINE

Poor roads may save taxes but the tolls they take on tires and in gasoline consumption and rubber bills, according to Prof. S. S. Steinberg of the University of Maryland and assistant director of the National Research Council's Highway Research Board.

Concrete or brick roads save tires according to tests which have been made to determine what kind of road wears out tires the least. In these tests, both cord and balloon tires are used at the inflation recommended by the manufacturers. The car is run up and down selected level stretches of different road types until the vehicle has covered a distance of 500 miles, after which the wear of the tires is determined. Thus far it has been found that tires wear the least on concrete and brick roads, the loss in weight of each tire on these surfaces being about one ounce for a 500 mile run.

"The tire wear on gravel roads is found to be from 2 to 7 times that on concrete or brick, while that on macadam varies from 10 to 50 times the wear on concrete or brick, depending upon the condition of the surface," Prof. Steinberg stated.

"The results also prove that front tires wear less than rear tires, the amounts being 50 per cent. to 75 per cent. less," he continued. "The relatively greater wear on rear tires is due to the bounding and spring of the rear wheels when traveling over rough surfaces. Experiments also show that when we start our cars from rest the rear wheels exert a downward kick on the pavement, ranging from 100 pounds to as much as one-half a ton. This blow must be resisted by the rear wheels and axle every time the vehicle is started from rest.

"Other investigations are being conducted to determine the relative consumption of gasoline and oil on different types of roads. As a result of these studies, it has been found that the increased consumption of gasoline required to travel by ordinary dirt roads costs the motorist as much as if he had to pay an additional tax of 24 cents a gallon on gasoline. Even good gravel roads impose

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an additional expenditure equivalent to a 9 cent tax. Compared with the tax imposed by bad roads, the gas tax : paid for highway improvement is truly insignificant."

Artificial winds created by large electric fans driving through a tunnel large enough to hold a full sized automobile are used to study the effect of wind resistance. The velocity of these man-made winds varies from 10 to 40 miles an hour, thus producing the same effect as if a car were driven through still air at these speeds. By testing a number of makes of cars it has been found that when you drive at 35 miles an hour, you are using about 8 horsepower to overcome the wind resistance. If you reduce your speed to 25 miles an hour, you save five horsepower.

BRITISH SCIENTISTS PLAN SCIENCE NEWS SERVICE

A British Science Service is now being planned by a committee of scientists appointed by a conference of representatives of leading British scientific and technical organizations. The British Association for the Advancement of Science and the British Science Guild joined in calling the conference to consider the advisability of establishing a news service to popularize science for the English newspapers and their readers. Resolutions were adopted approving the idea and the committee now at work was asked to recommend methods and organization. Sir. Richard Gregory, editor of "Nature", the leading scientific magazine of England, is chairman of the committee.

Encouraged by the success of Science Service in America, those sponsoring the project feel convinced that there is a place in British science and journalism for a similar organization to furnish authentic, yet interesting scientific news to the press. They realize, however, that there are problems peculiar to English journalism that must be met.

The organizing committee has been assured of the close cooperation of the American Science Service, now five years old, but the American organization, while cooperating and exchanging news, will have no financial interest in the new British organization. The movement for a British Science Service was inaugurated at a luncheon tendered by American Science Service to leading scientists at the South-hampton meeting of the British Association for the Advancement of Science last August.

"ONLY CHILD" NOT SO HANDICAPPED AFTER ALL

The only child in a family, so often pointed out as sure to grow up to be a horrible example, has found some one to stick up for him. Tests made in the psychological laboratory at Colgate University show that the only child gets as far as college, at any rate, without fulfilling the awful prophecy.

John C. Stuart, psychologist at Colgate who made the tests, says that the only

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child, who grows up without playmates in the home and who is all too often indulged by his parents, has come to be an object of pity in the eyes of the mental hygiene specialists. Looking at his childhood existence they see situations which at times appear to bode mental ill health in later life.

With this prevailing attitude in mind, the psychologist took 465 students representing families of different sizes and gave them tests designed to show up "undesirable emotional outlets". Eighty-one were the only children in their families; 124 were from families with two children, and five of the students had nine brothers and sisters.

Results of the test reveal no evidence that deviations from the normal depend on the number of brothers and sisters, or on the lack of them, Mr. Stuart reports. There was a slight tendency for the number of emotional symptoms to increase as the size of the family increased, but the differences were so slight and so irregular that they are not considered significant.

Experiments with women, with older men, or with men who were not college bred might yield different results, the psychologist suggests.

BEGGING NETS \$11 DAILY, INVESTIGATOR REVEALS

A crippled arm, tattered clothes and a tin cup are more profitable equipment for a good income than knowledge of bookkeeping or typing or many of the common trades. Eleven dollars a day, with a possibility of four times that amount, is within the capacity of the beggar on the city streets, according to the report of an investigation made by Roger Henry Freund of the University of Chicago. Beggars admitted to Mr. Freund incomes of from \$2.00 to \$20.00 a day, while an unobserved count of contributions they received as they plied their "trade" and an estimate for an eight hour day gave the results first stated. The actual income, however, is probably as a rule less than the estimated, since hours of begging are short. On the other hand, certain times of year are particularly profitable; for instance Christmas week, when one blind married couple made \$145.

More significant than the amount of money gained by begging is the information obtained by Mr. Freund regarding the origin of begging and the effect on the beggar's outlook on life. Children may be sent out by their parents and acquire the habit early in life. Blindness or an accident that temperarily or permanently destroys ability at a known trade plus lack of knowledge of help given by social agencies or excessive pride may cause a man to turn to begging while he searches for new work. The easy income and carefree life break the man's morale, and it is then easy for him to develop a philosophy which tells him that his begging is really working, and hence that he earns his money or that the world owes him a living or that most men get their money by some kind of graft anyway - so why not by begging? Social agencies working with beggars in an effort to give them training in some trade have often found them uncooperative; they "earn" by begging sufficient income for their families and hence do not want "charity"; or they can "earn" more with shorter hours by begging than with longer hours of factory work.

The public is most susceptible to children beggars and after them to those with some physical handicap, particularly the blind.

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mr. Fround found many factors contributed to begging: Crippled beggars alone are subject to the following: unscrupulous or thoughtless friends or relatives who hope to share in the money received; the unthinking public; condoning by police and courts of the practice and the attitude of the public which seems to justify begging by a cripple; legalization of begging under the pretext of selling cheap merchandise; development of the habit of begging; the pleasure of the irresponsible life; the natural despondency which follows an accident and makes a rehabilitation difficult. Many of these factors apply to other types of beggars as well as to cripples.

ELECTRIC INCUBATOR BEST HEN SUBSTITUTE

An electric incubator is the most satisfactory substitute for a hen, according to Edmund Burke, chemist at the Agricultural Experiment Station at the University of Montana.

Temperature is the most important factor in hatching eggs, he has found. The temperature of an electric incubator can be more readily controlled to simulate the temperature conditions under the hen than the elder types of hot air incubators. It has been found that eggs hatching under a hen vary several degrees in their temperature on top and on the bottom. Why this is desirable is not known, but the fact remains that, up to date a responsible motherly hen hatches a higher percentage of chicks than any incubator.

English experimenters have tried to imitate this condition by covering artificially hatching eggs with a thin sheet of rubber to keep the top warmer. They claim a highly increased per cent. in their hatch but the experiment has not been repeated in this country.

Mr. Burke found in his experiments that the carbon dioxide and moisture given off by the body of the hen during hatching are necessary elements in the chemical changes that render the calcium of the shell available for the bone formation of the embryo chick. The electric incubators were found to be superior in reproducing this condition also. The amount of moisture and carbon dioxide could be more easily controlled than in the hot air types and the quantity of each admitted to the eggs approximated more nearly the amount given off by the hen with a consequent increase in the hatching percentage of viable chicks.

GORILLA'S STRENGTH DUE TO PITUITARY ?

It is possible that the pituitary gland is responsible for the difference between men and gorillas.

The gorilla is, from the point of view of the structure of his anatomy, man's nearest relative. Contrasting man and his ape cousin in a lecture recently given before the Royal Cellege of Surgeons, Sir Arthur Keith, M. D., T. R. S., said that man has stayed in a state of physical development corresponding to a gorilla's youth. In his evolutionary career man has moved in the direction of brain while his next anthropoid neighbor has progressed in the direction of brawn.

and all souls, sometimes, and establicano del mentre del mandio del composito del compos * The first term of the second section is the second section of the second section in the second section is a second section of the second section in the second section is a second section of the second section in the second section is a second section of the second section in the second section is a second section of the section of th tellipsin the state of the naments of the grant of the explication as for the special and the second statement of the About forty or fifty years ago, he stated, when cases of abnormal growth were just beginning to be studied, some observers were struck with the fact that patients suffering from such a malady, now known in medical parlance as acromogaly, underwent changes similar to those occurring in the maturing phases of a gorilla. There was an immediate inclination to explain such phenomena as an evolutionary reversion to an ancestral state now represented in the bodies of gorillas, really back to the age stuff, in short.

Sir Arthur says of this explanation:

"It seems more legitimate, in the present state of our knowledge of the action of hormones on the growth of the body, to regard gorilline characters, whether they occur as a normal manifestation in the life-history of the gorilla or as an abnormal manifestation in the life-history of the acromegalic, as being due to an increased action of that element of the pituitary gland which influences the processes of growth."

This argument has been opposed on the ground that the gorilla does not possess an unusually large pituitary gland, but this contention is refuted by calling attention to the obvious complexity of that body which produces many substances the influence of which cannot be determined "by the crude use of scales or microscope".

Careful study of abnormal growth cases show the influence of the pituitary gland on the growth of the muscular, bony and alimentary systems, just the systems which undergo so great a degree of increase during the later stages of the development of the gorilla.

"We may therefore legitimately infer," concludes Sir Arthur, "that, in the evolution of the gorilla, the pituitary has played a prepotent part. The evidence, as it stands, is enough to justify the student of man and ape in believing that he has obtained a real glimpse into the machinery of evolution."

SMALLEST BACTERIA REVEALED THROUGH COATING WITH GOLD

A new and original method, by which ultra-microscopic particles a thousand times smaller than those observed with the aid of ultra-violet light may be rendered visible, is described by Prof. H. Bechold of the Institut fuer Kolloid-ferschung at Frankfort-on-main. Prof. Bechold is already very well known in scientific circles as a colloid chemist. The method is based on the discovery of Sir. W. B. Hardy, F. R. S., that negatively charged colloidal particles combine firmly with certain metals.

Prof. Bechold began by immersing paratyphoid and other bacilli visible under the ordinary microscope in a solution of gold chloride, and subsequently reducing them to ash on a microscope slide, so that only their gilded shells remained. These could then be used as centers for the deposition of further gold from a suitable solution.

The method was next applied to solutions of egg albumen, the particles of which are much too small to be visible even under the ultra-microscope. Nothing

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The same technique was then used to examine filter-passing micro-organisms. Success was claimed particularly in the case of the bacteriophage discovered some six years ago by the famous French-Canadian bacteriologist, d'Herelle. This bacteriophage is one of the great mysteries of micro-biology. It brings about the destruction of dysentery and other bacilli, but expert opinion is sharply divided as to whether it is a living organism or a ferment. At any rate it is enormously smaller than the bacteria which it attacks.

Prof. Bechold has also attempted to gild the ultra-microscopic, virus of smallpox, but so far without success, although he is continuing his experiments. In view of the claim by Dr. W. E. Gye and J. E. Barnard that cancer is due to a filterpassing micro-organism, great interest has been excited by Prof. Bechold's investigations among British cancer research workers.

BABIES WITH RICKETS SLOW TO CUT TEETH

All babies who cut their teeth late may not have rickets but all who have even mild rickets are slow to cut teeth.

In a report to the American Medical Association, Drs. Julius Blum and Jacob Mellion say that fully 75 per cent. of all artificially fed and nearly 50 per cent. of all breast fed infants show evidence of a mild form of rickets during the first two years. This condition frequently passes unnoticed and is prevalent among rich and poverty-stricken alike, in contrast to the severe type which is confined almost entirely to the poor.

Observations made at the Home for Hebrew Infants in New York seem to warrant the statement that not only the appearance of the first tooth but subsequent ones as well are delayed by rickets. "This", the experts say, "is interesting in showing the systemic nature of the metabolic disturbance of rickets as well as the close relation of teething to the development and ossification of the long bones."

In spite of the definite difference between normal and rachitic infants, however, retarded teething cannot be considered, the experts say, as a definite symptom for rickets diagnosis because of the appreciable influence of other factors, notably hereditary, on the evolution of the teeth.

The sense of smell is said to grow more keen as we grow older.

Eighty per cent. of the homes in the United States are built of wood.

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WHY FLOUR SHOULD NOT BE GROUND TOO FINE

Flour ground too fine does not make good bread. While millers have always been aware of this fact no one seems ever to have determined upon what the poorer quality depended. Accordingly, Drs. C. L. Alsberg and E. P. Griffing, two biological chemists of the Food Research Institute at Stanford University, have undertaken a series of experiments to answer this question.

They have found that in over ground flours the starch granules are injured so that carbon dioxide is given off at first instead of gradually throughout the whole baking process. This gives a bread that "rises" too fast at first and will not "come up" in the oven.

The gluten, also, of very finely ground flours is injured. Gluten is the substance in dough that gives it elasticity. Without this elastic property the dough is very difficult to knead. Any housewife knows that dough that is "crumbly" rather than "stretchy" will not make good bread.

The facts presented in the investigation show that the baking quality of flour is modified considerably by the mere mechanical processes to which it is subjected. Further studies are in progress at the Food Research Institute at Stanford to determine more fully the possibility of improvement of flour by the mechanical treatment.

CZECHOSLOVAKIA TO EXCAVATE MANY SITES FOR EARLY MAN

Extensive excavations in Czechoslovakia are expected to yield rich booty to the students of man's remote ancestors. Dr. Ales Hrdlicka, of the Smithsonian Institution, in a recent issue of the Journal of Physical Anthropology, says that this section contains three major stations of Aurignacian man who lived in the neighborhood of 20,000 years ago, more or less.

It is hoped that the work at Vistonice, one of the greatest sites for remains of this period so far discovered, will reveal burial grounds of these long extinct races. A veritable cemetery of mammoth bones has already been unearthed at this point.

Predmost, in central Moravia, which has in the past yielded vast collections, was until recently thought to be exhausted. The diggings of a brick concern, however, in 1925 brought to light the fact that the site was much more extensive than was formerly believed and anthropologists are eagerly looking forward to what may yet be brought to light.

The excavation in the course of engineering works is responsible for the discovery of a third site of great promise near the manufacturing city of Vitokovice, northern Moravia.

The excavations to be undertaken this year at all these places are being financed by the Czechoslovakian government and will be carried out under the supervision of the Czechoslovak Archaeological Institute and the Zemske Museum at Prne. In addition to the three great Aurignacian sites there have now been located in Moravia no less than 70, mostly as yet untouched, sites of palaeolithic man.

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Moravia (the central part of Czechoslovakia) has been, Dr. Hrdlicka explained, a particularly favorable region for occupation by early man. It is for the most part a beautiful gently rolling country of rich soils and good climate; while the limestone hills are full of ancient caves.

TABLOID BOOK REVIEW

MICROSCOPY IN THE SERVICE OF MAN. By Robert M. Neill, New York; Henry Holt and Company. Home University Series. 1926. \$1.00.

This little book contains a rapid summary of the manifold aspects of human life that have been affected by the new sight given to man by the invention of the compound microscope. It is a sharp reminder to scientists that one of the things they take for granted is really a brazen and crystal door into a whole world of wonder and romance; and it should be a revelation to the inquiring layman.

COLLEGE PHYSICS; by A. Wilmer Duff. New York; Longmans, Green and Co., 1925. 484 pp., \$3.00.

In this book, the publishers have produced a really good general physics. All the fundamental facts are presented, and without too great use of mathematical expressions, although the author does not hesitate to bring them in when necessary. Such recent advances as the quantum theory, the theory of relativity and X-ray spectra, are briefly mentioned.

ASTRONOMICAL PHYSICS; by F. J. M. Stratton. New York, E. P. Dutton and Co., 1926. 213 pp., \$5.00.

With the great advance that recent years have seen in the physics of the stars as well as of terrestrial bodies, such a book as this one of Dr. Stratton's is most. welcome, for it presents in small compass the latest and best views of the physical conditions of the stars, and the methods by which they are determined. Obviously, to treat of such subjects as the sun, stellar evolution, novas, variable stars, nebulae, and still others, each of which has been the subject of numerous treatises, in the space of 213 pages, is not easy, especially if it is to remain intelligible. However, the author has achieved a considerable degree of success and while the book is not one to be recommended for light reading, it is easily comprehensible to anyone with a general knowledge of modern physics.

The brilliant bird of paradise is a close relative of the common crow.

The average family in the United States spends \$10 a year for soap.